		Pushing the En	velope				
		2004 Scien					
Standard Course of Study							
North Carolina Science							
Grade 5							
Activity/Lesson	State	Standards					
Physics and Math			Determine that an unbalanced force is needed				
(pgs. 43-63)	NC	SCI.5.4.04	to move an object or change its direction.				
Physics and Math			Determine factors that affect motion including:				
(pgs. 43-63)	NC	SCI.5.4.05.a	Force.				
Rocket Activity (pgs.			Determine that an unbalanced force is needed				
69-75)	NC	SCI.5.4.04	to move an object or change its direction.				
Rocket Activity (pgs.			Determine factors that affect motion including:				
69-75)	NC	SCI.5.4.05.a	Force.				
		Pushing the En	nyalona				
		2004 Scien					
		Standard Course					
North Carolina Scien	ice						
Grade 7							
Activity/Lesson	State	Standards					
			Describe and measure quantities that				
Types of Engines (characterize moving objects and their				
pgs. 11-23)	NC	SCI.7.6.05.c	interactions within a system: Mass.				
			Describe and measure quantities that				
Types of Engines (characterize moving objects and their				
pgs. 11-23)	NC	SCI.7.6.05.e	interactions within a system: Velocity.				
Physics and Math			Evaluate motion in terms of Newton's Laws: The				
(pgs. 43-63)	NC	SCI.7.6.03.a	force of friction retards motion.				
			Evaluate motion in terms of Newton's Laws: For				
Physics and Math			every action there is an equal and opposite				
(pgs. 43-63)	NC	SCI.7.6.03.b	reaction.				
DI : 1.84 (I			Evaluate motion in terms of Newton's Laws: The				
Physics and Math	NO	0017000	greater the force, the greater the change in				
(pgs. 43-63)	NC	SCI.7.6.03.c	motion.				
Physics and Math	NC	CCI 7 6 02 d	An object's motion is the result of the combined effect of all forces acting on the object:				
(pgs. 43-63) Physics and Math	INC	SCI.7.6.03.d	Evaluate motion in terms of Newton's Laws: An				
(pgs. 43-63)	NC	SCI.7.6.03.f	object at rest will remain at rest.				
(pgs. 45-05)	INC	301.7.0.03.1	Describe and measure quantities that				
Physics and Math			characterize moving objects and their				
(pgs. 43-63)	NC	SCI.7.6.05.b	interactions within a system: Distance.				
(pgs. 45-05)	INC	301.7.0.03.0	Describe and measure quantities that				
Physics and Math			characterize moving objects and their				
(pgs. 43-63)	NC	SCI.7.6.05.d	interactions within a system: Force.				
Rocket Activity (pgs.	110	001.7 .0.00.u	Evaluate motion in terms of Newton's Laws: The				
69-75)	NC	SCI.7.6.03.a	force of friction retards motion.				
	1.10	231.7.0.00.0	Evaluate motion in terms of Newton's Laws: For				
Rocket Activity (pgs.			every action there is an equal and opposite				
69-75)	NC	SCI.7.6.03.b	reaction.				
- /	1	2 3 10.00.0	Evaluate motion in terms of Newton's Laws: The				
Rocket Activity (pgs.			greater the force, the greater the change in				
69-75)	NC	SCI.7.6.03.c	motion.				

Activity/Lesson	State	Standards	
Grades 9-12 (Physics			
North Carolina Scien	ce	Standard Course	or Study
		2004 Scien	
		Pushing the En	
69-75)	NC	12.PS.3.02.b	work: Distance.
Rocket Activity (pgs.		SCI.9-	Investigate and analyze transfer of energy by
69-75)	NC	12.PS.3.02.a	work: Force.
Rocket Activity (pgs.	1.2	SCI.9-	Investigate and analyze transfer of energy by
Rocket Activity (pgs. 69-75)	NC	SCI.9- 12.PS.2.02.c	an equal and opposite force is exerted by the second on the first.
69-75)	NC	12.PS.2.02.b	force and inversely proportional to the mass. Whenever one object exerts a force on another,
Rocket Activity (pgs.	NO	SCI.9-	Change in motion of an object (acceleration) is directly proportional to the unbalanced outside
Rocket Activity (pgs. 69-75)	NC	SCI.9- 12.PS.2.02.a	In the absence of a force, an object in motion will remain in motion or an object at rest will remain at rest until acted on by an unbalanced force.
(pgs. 43-63)	NC	12.PS.3.02.b	work: Distance.
Physics and Math	1	SCI.9-	Investigate and analyze transfer of energy by
(pgs. 43-63)	NC	12.PS.3.02.a	work: Force.
Physics and Math	110	SCI.9-	Investigate and analyze transfer of energy by
Physics and Math (pgs. 43-63)	NC	SCI.9- 12.PS.2.02.c	an equal and opposite force is exerted by the second on the first.
			Whenever one object exerts a force on another
Physics and Math (pgs. 43-63)	NC	SCI.9- 12.PS.2.02.b	directly proportional to the unbalanced outside force and inversely proportional to the mass.
(Pg0. 10 00)	1.10	12.1 0.2.02.4	Change in motion of an object (acceleration) is
Physics and Math (pgs. 43-63)	NC	SCI.9- 12.PS.2.02.a	remain at rest until acted on by an unbalanced force.
Dhusias and M. O.		0010	will remain in motion or an object at rest will
			In the absence of a force, an object in motion
Activity/Lesson	State	Standards	
Grades 9-12 (Physica			
North Carolina Scien	re	Standard Course	of Study
		2004 Scien Standard Course	
		Pushing the En	
-,	-		
69-75)	NC	SCI.7.6.05.d	interactions within a system: Force.
Rocket Activity (pgs.			Describe and measure quantities that characterize moving objects and their
69-75)	NC	SCI.7.6.05.b	interactions within a system: Distance.
Rocket Activity (pgs.			characterize moving objects and their
			Describe and measure quantities that
69-75)	NC	SCI.7.6.03.f	object at rest will remain at rest.
Rocket Activity (pgs.			Evaluate motion in terms of Newton's Laws: An
		SCI.7.6.03.d	lenect of all forces acting on the object.
Rocket Activity (pgs. 69-75)	NC	00170004	object's motion is the result of the combined effect of all forces acting on the object:

			Assess, measure, and calculate the relationship
			among the force acting on a body, the mass of
Types of Engines (SCI.9-	the body, and the nature of the acceleration
pgs. 11-23)	NC	12.PH.4.03	produced (Newton's Second Law of Motion).
Types of Engines (110	SCI.9-	Assess the vector nature of momentum and its
pgs. 11-23)	NC	12.PH.5.01	relation to the mass and velocity of an object.
pgs. 11 20)	110	12.1 11.0.01	Determine that an object will continue in its state
			of motion unless acted upon by a net outside
Physics and Math		SCI.9-	force (Newton's First Law of Motion, The Law of
(pgs. 43-63)	NC	12.PH.4.01	Inertia).
(pgc. 10 00)	1.10	12.11.11.01	Assess, measure and calculate the conditions
Physics and Math		SCI.9-	required to maintain a body in a state of static
(pgs. 43-63)	NC	12.PH.4.02	equilibrium.
(F30: 10 00)			
			Assess, measure, and calculate the relationship
			among the force acting on a body, the mass of
Physics and Math		SCI.9-	the body, and the nature of the acceleration
(pgs. 43-63)	NC	12.PH.4.03	produced (Newton's Second Law of Motion).
(F30: 10 00)		120 100 100	Analyze and mathematically describe forces as
Physics and Math		SCI.9-	interactions between bodies (Newton's Third
(pgs. 43-63)	NC	12.PH.4.04	Law of Motion).
Physics and Math		SCI.9-	Assess the independence of the vector
(pgs. 43-63)	NC	12.PH.4.05	components of forces.
,			Determine that an object will continue in its state
			of motion unless acted upon by a net outside
Rocket Activity (pgs.		SCI.9-	force (Newton's First Law of Motion, The Law of
69-75)	NC	12.PH.4.01	Inertia).
,			Assess, measure and calculate the conditions
Rocket Activity (pgs.		SCI.9-	required to maintain a body in a state of static
69-75)	NC	12.PH.4.02	equilibrium.
			Analyze and mathematically describe forces as
Rocket Activity (pgs.		SCI.9-	interactions between bodies (Newton's Third
69-75)	NC	12.PH.4.04	Law of Motion).
Rocket Activity (pgs.		SCI.9-	Assess the independence of the vector
69-75)	NC	12.PH.4.05	components of forces.
		Pushing the Env	
		2004 Science	
		Standard Course of	of Study
North Carolina Scier			
Grades 9-12 (AP Phy			
Activity/Lesson	State	Standards	
Physics and Math	NO	SCI.9-	Investigate, measure, and analyze Newton's
(pgs. 43-63)	NC	12.PB.2.02.a	laws of motion: Static equilibrium (first law).
Discosion on LAA ()		001.0	Investigate, measure, and analyze Newton's
Physics and Math	NO	SCI.9-	laws of motion: Dynamics of a single particle
(pgs. 43-63)	NC	12.PB.2.02.b	(second law).
Discosion on LAA ()		001.0	Investigate, measure, and analyze Newton's
Physics and Math	NO	SCI.9-	laws of motion: Velocity with constant force and
(pgs. 43-63)	NC	12.PB.2.02.c.1	average force.
Physics and Math	NC	SCI.9-	Investigate, measure, and analyze Newton's
(pgs. 43-63)	NC	12.PB.2.02.c.2	laws of motion: Force diagram.

Dhysics and Math		6010	Investigate, measure, and analyze Newton's
Physics and Math	NO	SCI.9-	laws of motion: Action and reaction forces an
(pgs. 43-63)	NC	12.PB.2.02.e	two or more bodies (third law).
Physics and Math		SCI.9-	Investigate, measure, and analyze Newton's
(pgs. 43-63)	NC	12.PB.2.02.f	laws of motion: Tension.
Physics and Math		SCI.9-	Examine and calculate work, energy and power:
(pgs. 43-63)	NC	12.PB.2.03.b	Conservative forces and potential energy.
			Investigate, measure, and analyze Newton's
Rocket Activity (pgs.		SCI.9-	laws of motion: Velocity with constant force and
69-75)	NC	12.PB.2.02.c.1	average force.
Rocket Activity (pgs.		SCI.9-	Investigate, measure, and analyze Newton's
69-75)	NC	12.PB.2.02.c.2	laws of motion: Force diagram.
			Investigate, measure, and analyze Newton's
Rocket Activity (pgs.		SCI.9-	laws of motion: Action and reaction forces an
69-75)	NC	12.PB.2.02.e	two or more bodies (third law).
Rocket Activity (pgs.		SCI.9-	Investigate, measure, and analyze Newton's
69-75)	NC	12.PB.2.02.f	laws of motion: Tension.
Rocket Activity (pgs.		SCI.9-	Examine and calculate work, energy and power:
69-75)	NC	12.PB.2.03.b	Conservative forces and potential energy.